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The physical plant administrator manages men, money and materials to create the best possible physical environment for the educational processes at his institution. Areas of concern of the plant administrator are administration, building maintenance, janitorial services, traffic, security and safety, utilities, grounds, alterations, and improvements. Elements suggested for successful plant management are--(1) planning, both immediate and long-range--defining goals and determining means, (2) organizing, with emphasis on communications, (3) supervision--directing, motivating and co-ordinating, and (4) controlling--setting standards, checking and reporting on performance, and correction of performance. Development of people is also listed as an important aspect of successful plant administration. A job description for a superintendent of buildings and grounds is outlined under two major headings--(1) development for approval of the business manager programs for the maintenance, repair, and operation of college buildings and grounds, and (2) assisting, serving and acting for the business manager in planning the development of the physical plant. (HH)

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ELEMENTS OF SUCCESSFUL PLANT MANAGEMENT

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If I were to start out by saying one of my basic themes is that the world changes, I am afraid I would lose my audience right then and there. You would sit back and say, "So what's new about that?" Well, the factor which may be controversial is that I am not talking about the big bad world out there. Instead, I am talking about your world--your nice comfortable, ivy-clad, institutional world of rules, regulations, and red tape. You may explain that many practices on your campus are cherished traditions and that you have always done things that way. I would reply that all administrators must fight to avoid the institutional approach and that they must constantly strive to find new and better solutions to their problems. Actually, I think most of us would agree that some changes are for the better and that if our small colleges are to play a significant role in the changing educational scene, they must constantly search for better ways to teach, motivate, and manage.

We may look back with nostalgia to the good old days, when the ideal college was described (in words attributed to Mark Hopkins) as "a log of wood with an instructor on one end and a student on the other." The system has certainly changed since that day. We cannot afford a student-teacher ratio of one to one (if we ever could), we expect more comfortable conditions, our teachers demand offices and telephones and secretaries and carpeting on the floor, and our students insist upon pleasant places to live and play.

We have come a long way since the days of Mark Hopkins but many institutions still resist change and some of our college campuses still have buildings which are run-down, inefficient, and unsafe, and these are cared for by tired old handymen who patch things up with baling wire and friction tape.

I have said that things are changing and I will be more specific about some of the changes that are being reflected in the physical plant. In the first place, our college population is steadily growing. Although some of our small colleges will fail and will pass from the educational scene, most of them will continue to grow, and some will become large institutions with substantial resources and huge expenditures for new buildings and equipment.

Secondly, the methods of education are changing rapidly. We are finding, on one hand, more large classes and, on the other hand, a more personalized approach through small discussion groups and self-instruction and so we need more large classrooms and more seminar rooms, carrels, and small laboratories. The developments in audiovisual equipment, electronic data processing, and computers, are having profound effects on the educational processes and, in turn, on the physical plant.

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Thirdly, and this is the area on which I will elaborate, our philosophy of management is changing. The March 1967 issue of EXECUTIVE DIGEST semi-humorously defines an executive as:

> "...a man who has practically nothing to do except decide what has to be done; to tell somebody to do it; to listen to the reasons why it should not be done, why it should be done by somebody else, why it should be done in a different way; to follow up to see if the thing has been done, only to find that it has been done incorrectly; to find out how it should have been done; to conclude that as long as it has been done, it may as well be left where it is; to wonder if it is not time to get rid of a person who cannot do a thing right; to reflect that he probably has a wife and a large family and that certainly any successor would probably be just as bad and maybe worse."

That may be a realistic description of the situation in which we sometimes find ourselves, but it is not a definition of a good administrator.

Seventy-five years ago the generally accepted pattern of management was authoritarian, in which the administrator was an autocrat who gave all the orders and controlled the organization with a tight fist. His position was much like that of a general in the army. Today businesses and institutions tend to be operated on a more democratic basis in which the manager depends more upon the cooperation and teamwork of his fellow workers. While he is still responsible for the success of the total organization and he still retains the ultimate authority for making the important decisions, his role is now more like that of the captain of a team.

I. THE PLACE OF THE PHYSICAL PLANT DEPARTMENT IN THE SMALL COLLEGE

Basically, the job of the physical plant administrator is to manage the available men, money, and materials to create and maintain the best possible physical environment for the educational processes at his institution.

In some small colleges, the business manager is the principal administrator in charge of the physical plant, with various tradesmen reporting directly to him. In others, he may have an able assistant who has responsibility for the management of the physical plant department; in addition, this assistant may also be responsible for purchasing, auxiliary enterprises, office services, or other functions depending upon his training, interests, and ability. Still other colleges have full-fledged superintendents of buildings and grounds, but in almost every case, the function of physical plant administration will appear on the organization chart somewhere under the business manager. The functions of campus planning and space utilization may or may not be assigned to the superintendent of buildings and grounds. While the business manager may delegate responsibility for some or all of these functions, he ultimately must share in the important decisions.

The functions of the department of buildings and grounds are many and varied. During World War II the three terms, maintenance, repair, and operations (MRO), were used and I still like these designations.

Under the heading of maintenance comes the routine work for the buildings, grounds, and equipment. The term "preventive maintenance" (PM) is very popular today but, as far as I am concerned, this is simply a new way of describing a good maintenance program with systematic scheduling of work to ensure that each piece of equipment gets the proper attention regularly, in contrast to what happens when we have no such program--when we just wait until the equipment breaks down or begins to cause trouble.

One simple example of a preventive maintenance program with which you are all familiar is the service manual which comes with your car. This gives you a list of things which must be done and sets up a schedule for them. Another example is the service contract on your elevators. However, even with a good system of preventive maintenance, many repairs will still be necessary. These may be done by the department of buildings and grounds or perhaps by outside contractors depending upon cost, work load and other factors.

Under the heading of operations comes generating steam, cleaning buildings, setting up for special events, locking up buildings and turning out lights, removing trash, and all the many jobs which are needed to keep the physical plant operating day-to-day.

The department of buildings and grounds may also be involved in related services such as transportation, communication and protection. Alterations and improvements are frequently handled by this department, although this work is frequently subcontracted to outside firms.

If you have a capable person in charge of your buildings and grounds, he should certainly play an important part in the functions of campus development and building planning. No other person is likely to know so much about your campus and your buildings and the peculiar physical requirements of your institution. It would be a serious mistake to overlook the experience and knowledge of this person when you are making plans for the future.

The physical plant administrator must be many things to many people and he is expected to be an authority on all phases of physical plant maintenance, repair and operation. He is frequently asked to do the impossible, without spending any money, and <u>please</u> get it done yesterday. If you have not yet found a man who can meet these specifications perhaps the best you can hope for is to locate one who is a good manager, who has a technical background, who continues to learn, and who knows where to go for help.

You may wonder where to find such a man; the answer is not easy. I can only suggest that you try a number of different sources. One possibility is to try to train one of your recent alumni, perhaps one who has spent his summers working on your own buildings and grounds. Graduates of various trade schools are sometimes worth considering. You may be able to lure a good man away from a local contractor or public school system. Classified ads in College and University Business frequently get results. Our National Association of Physical Plant Administrators can sometimes help by placing an announcement in our monthly Newsletter. The College and University Personnel Association also runs a recruiting service.

For your help, I have attached a sample job description for the position of superintendent of buildings and grounds. This may not fit your particular requirements but it might be helpful in the preparation of a similar statement for your institution.

II. ELEMENTS OF SUCCESSFUL PLANT MANAGEMENT

As we analyze the job of the physical plant administrator, we might go back to the textbooks on management and find that the work of an administrator can be divided into five basic processes: Planning, organizing, supervising, controlling and developing people. Let us consider these basic processes of administration one by one.

Planning

Basic to all other administrative functions is planning, yet this is a phase that is generally neglected. Leaders of men are likely to be men of action who are eager to get the job done and they may not be naturally inclined to sit down and make careful plans before they spring into action. They keep so busy with their day-to-day activities, so buried under mountains of paper work, so pressured by their colleagues, that they do not take out enough time to think about the important questions such as, "What are we really trying to do here?" and "What is a better way to do this job?."

Of course, the first step in planning is to see your goals. What kind of an institution do you want to be? What is to be your peculiar contribution to the educational scene? What are you really trying to do on your campus?

Thus, when I speak of planning, I mean both long-range planning, which may attempt to look ahead as far as ten years, or perhaps even further, and also more immediate planning to implement our long-range goals.

On our campus, the top administrators have found it worthwhile to schedule "retreats" several times through the school year. The president and his administrative council leave the campus for several days so they can get away from the daily pressures and, in a relaxed atmosphere, face and discuss the basic issues. This is not an easy thing to do; all of us are busy and no time is convenient; this function of planning, however is so essential that we simply just take the time.

The board of control of your institution has the authority to make the final decisions on plans for the future of your college but the actual work of developing plans should include the best thinking of all the persons involved -- the administration, the faculty, and the students.

The second step in planning is to determine what it will take to reach these goals. What must you do to make these dreams come true? This process must include the making of at least three different sets of plans, all of which must be closely related to each other. You must have an educational plan. You must have a financial plan. And you must have a campus master plan. These three plans are so closely interrelated that they must proceed together. Any change in one will necessitate a re-examination of the others.

The development of the educational policies may be the primary responsibility of the president or of the academic dean. The planning group responsible for developing these policies should include significant faculty representation and the business manager should certainly be an important member. He must have a clear understanding of the educational policies and goals of his institution and he should also be able to make a real contribution to the thinking of the group.

This committee will be concerned with questions such as: How can we best fit into the program of higher education in our state, region, and nation? How fast should we grow? What kind and quality of faculty should we try to develop? What faculty-student ratio should we maintain? How much emphasis shall we place on research? What should be our admissions policies? What subjects should we teach and what are the best ways to teach them? How can extracurricular activities contribute to the education of our students?

These educational policies must be translated into a specific program with forecasts for the courses to be offered, the enrollment for each course, the number and size of sections, the number of faculty and staff, the number of books in the library, and the related services needed, including social and cultural opportunities.

The development of the financial plan should be the primary responsibility of the business manager or chief financial officer. This group will concern itself with money: Where will it come from and where should it go?

As you too well know, money is necessary to every institution; without it, no plans have any hope of realization. Therefore, all of the top administrators, including the president, academic dean, and fund raiser, should be included on this committee, along with appropriate representatives of the faculty. As usual, you will not be able to afford all of the things you want and this group will have to face reality and make some painful decisions. When your funds are limited, as they always are, you must set priorities, and this means evaluating various proposals and cutting some of your dreams down to fit the budget.

The annual operating budget is the expression in monetary terms of the educational program of the institution. If you have had the experience of developing budget projections for the next ten years, you have certainly realized that financial planning must reflect the educational planning of the institution. It is easy to project budgets based solely on past experience, but this exercise has no real meaning unless it is based on projections of the educational program.

The development of the campus master plan may be the primary responsibility of the business manager; the committee should include the president the academic dean, the fund raiser, the superintendent of buildings and grounds, suitable representatives from the faculty, and outside consultants as needed. This group will be concerned with providing the best possible environment for the educational plan, but it must operate within limits set by the financial plan. This committee will gather together, screen, integrate, and crystallize the hopes and dreams and expectations of the college community for the development of the campus. It will be concerned with the concept of zoning for residential areas, for educational programs, and for athletic and other noisy activities. They will also consider the flow of traffic onto, as well as within, the campus, with parking facilities, transmission of utilities, land acquisition and space standards.

Please remember my theme that things change. The educational plan will change; the financial plan will be modified; and certainly the campus master plan should be reviewed and revised periodically if it is to be a living, meaningful document.

Planning a new building may be a major project on your campus but it is an easy job compared to developing the plans we have been talking about so far. Therefore, let me warn you as forcefully as I can not to yield to the temptation to go ahead and build the new building before you have done all of the other necessary planning. It is all too easy to skip the planning stage and turn the whole problem over to an eager architect who will be only too glad to erect on your campus--at your expense but with very little concern for your problems--a monument to his artistic genius, but you will be haunted (and hounded by your faculty) for years to come by the fact that you could have built a building which helped rather than hindered your educational activities, and for less money, if you had spent more time in the planning stages.

Just to remind you that this problem of getting a good building at a reasonable cost is not a new one, I thought I might quote Shakespeare to show you the problem had appeared even then. In King Henry IV, Lord Bardolph said:

> When we mean to build,
> We first survey the plot, then draw the model;
> And when we see the figure of the house,
> Then must we rate the cost of the erection;
> Which if we find outweighs ability,
> What do we then but draw anew the model
> In fewer offices, or at least desist
> To build at all?

We fortify in paper and in figures,
Using the names of men instead of men:
Like one that draws the model of a house
Beyond his power to build it; who, half through,
Gives o'er and leaves his part-created cost
A naked subject to the weeping clouds,
And waste for churlish winter's tyranny

At this point I want to say something about the selection of the college architect and engineer. Too often these selections are made lightly and the results are far from ideal. I urge you to give serious thought to the process by which the selection is made. There are all kinds of architects in the world and, if you do not have the one that is best for your institution, maybe there is something you can do about it.

The process of intelligently choosing an architect involves a lot of hard, detailed work for someone. Ordinarily the board of trustees plays an important role in the selection of the architect but they can hardly be expected to do all the preliminary "leg work"; much of the search, then, must be done by someone from the business office. In our case, the business manager and the superintendent of buildings and grounds worked for 12 months as a team to carry out an extensive investigation and screening.

The first step was to decide what we wanted our buildings to be like. We decided that our buildings should be informal and friendly, rather than cold and monumental. Next we decided that they should be good examples of contemporary architecture. Lastly we assumed that any buildings we were to erect in the future would not be much larger than most structures built in the recent past.

With these precepts in mind--and you can see that they automatically ruled out many well-known firms--we tried to find the kind of architect who would suit us and our needs.

Our architect, we decided, should be both creative and practical; we realized this is a difficult combination. On the one hand he should be able to capture the simple, honest spirit of our Quaker college and translate it into attractive buildings. He should be an artist with the elements of design: light, form, texture, and color. He should also be a master of the elements of comfort, such as heat and ventilation, illumination, and acoustics. Our buildings must be both beautiful and functional. Since few individuals are both creative and practical, we felt the best way to get both of these qualities would be to find a firm which included both types of personalities.

We felt our architect should be cost-conscious from the beginning, since one of our goals is long-range economy. We know that economy must be a consideration before the planning starts. It must be reflected in the basic planning itself, in the wise use of space, in the creative use of standard components, and in the provision for low-cost maintenance in the years to come.

Communications must flow easily between the architect and the client. Location and size are both important considerations in this matter and we decided our architect should be located within one hundred miles of our campus. Another factor is the size of the architect's office. He must have a staff large enough to handle the work efficiently, but we wanted one small enough so that we could get personal attention from a principal in the firm.

Personality is difficult to evaluate but, since a college architect has to work with a number of committees, he should have a strong enough character to stand firm with his convictions and sell his best ideas to committees or donors, yet also possess a sensitivity and a willingness to listen to suggestions--even foolish ones.

The college architect must have good taste because his client will frequently depend upon him to make decisions on questions concerning aesthetics. Admittedly, good taste is hard to define--so difficult that we may be inclined to give up and declare "Every man to his own taste." However, liberal arts colleges teach that certain standards of beauty and order do exist and these principles should be demonstrated in the design of our building.

After having defined for ourselves what we hoped to find in an architect, we next turned to investigating the reputations of architects in our area. To find out how their clients felt about their buildings, we turned to our neighboring colleges for advice, and tried to get the judgment of the persons most closely involved in the actual operation of the building, namely the business manager or the superintendent of buildings and grounds.

To get practical information about the kind of plans and specifications which various architects prepare, we talked with contractors and engineers, and to get some idea of the professional standing of architects, we checked with schools of architecture and with architectural journals.

This process of investigation yielded a list of twenty-four architectural firms in our area which sounded promising. Our next step was to send a team of two members to the architects' offices to get the "feel" of the organization, to become familiar with their staffs, to see some of their buildings, and to learn about their general approaches to architectural problems. We discovered that architects are not all alike. They have many fundamentally different approaches. A few firms were obviously not meant for us. Many others were mediocre by our standards, and we found only a few about which we could be enthusiastic. We wrote detailed reports on each firm and prepared a complete display of material on the four which seemed best to us, then presented this to our president and to our board of trustees who made the final selection.

You can see that this process took a lot of work but we forced ourselves to find time for this project because we felt it was so important. Now that it is all over, we both feel it was one of the most significant contributions we have made to our college.

Before I leave this subject, I should stress that we feel it is just as important to have one good engineering firm who does all of the work for the college. He knows us and our peculiarities and our long-range goals, so each step we make fits into the overall plan.

The process of planning is also essential in the more routine administration of the department of buildings and grounds. Sometimes you just have to "play it by ear" or "drift with the stream" but, generally speaking, you will do better to make careful plans and to work in a purposeful direction. Careful planning is necessary to set up the budget, to determine target dates, to establish work standards, to establish levels of cleanliness, to prepare lists of standardized equipment, and to work out effective personnel policies.

Organizing

The second major job of the administrator is organizaing. Remembering that his is a service organization, the man in charge of the physical plant should analyze the activities which his department must perform, and he must organize his department to use as effectively as possible the men and money and materials which are available.

I have become convinced of the value of centralized shops and store rooms. You cannot expect a plant administrator to organize an efficient operation if his shops and stores are scattered around in basements and garages. His men and materials should be housed under one roof where he can keep in constant touch with them.

If you are about to build a new shop building, you will have to make a number of important decisions. I think the best solution for the small college is to have one big open space for a shop which is shared by the various trades, although you will probably find that each craft will prefer a separate shop of its own. The big open space is obviously cheaper to build and I think it gives better control of the men and, in addition, it seems to do more toward developing a spirit of teamwork.

In setting up the orgainization of the department of buildings and grounds, the secretary is a key member as most calls will go no further. For most people, she will be the primary contact with the department. Many faculty and students hesitate to communicate with the business office or the physical plant department but, if the secretary is friendly, helpful, and efficient, then people feel freer to bring their problems to us.

The quality and character of the workmen is also obviously important. I am sure that cheap labor is likely to be expensive in the long run. You cannot afford to compete with the wages paid by unionized construction firms but you do have many other benefits to offer and, by paying a decent wage, you can attract good men who will turn out good quality work in an efficient manner. In so doing, you will be far ahead of those institutions which limp along with tired old men who may be willing, but

not able, to turn out a good day's work. Incidentally, all of the men in our department are called "maintenance men." They do have their specialties but they are not above crossing lines and helping each other whenever necessary.

One question which is frequently asked is, "How much actual productive work can you hope to get from a maintenance man in an eight-hour day?" This depends upon many factors but I would be happy if a carpenter spent six hours a day pounding nails and sawing wood. The rest of his time will be spent on making plans, assembling material, coming and going to the job, writing reports, and of course taking the inevitable coffee breaks.

Communications are always a problem in any organization--communications, that is, up and down and sideways. Even if you think you are doing a good job of communicating, you will sometimes be surprised to find out that you have failed miserably. Not only are you out of touch with what is happening out there in the shop or on the campus but your policies and decisions are not getting through clearly to the people who are most affected.

Good communications depend both upon a willingness to share your thinking and your knowledge, and upon your willingness to try to understand the other person's point of view. Even with the best of intentions, this process is neglected when you are busy with more pressing problems. It is, therefore, helpful to formalize the process and to set up a system that will encourage the sharing of information and ideas. Posting announcements on the bulletin boards is one step. We find regular newsletters to the faculty and staff to be helpful. Further, I am a firm believer in regular staff meetings, even if there seems to be no pressing business at hand, since they give an opportunity to talk things over in a calm atmosphere and to plan ahead. We also schedule periodic visits to the shop by our top administrators who come to talk and stay to learn. Staff parties and picnics also help to develop the feeling that we are all important members of the college community.

Our business manager took a bold step toward breaking down some of the barriers which tend to separate that office from the rest of the campus when he sent a mimeographed letter to each member of the faculty and staff. This communication first outlined the areas of responsibility that come under the broad umbrella of the business office operation and then invited comments. He asked some specific questions, such as:

> Do you have suggestions which would make the operation of the business office and its services of more value to you?
>
> What additional services do you feel would be of benefit to the college as a whole? To you in particular?
>
> Other comments--suggestions--frustrations?

This letter had several good effects. It not only reminded people that we are concerned about their problems but it also brought out a number of good ideas for improving our organization.

Supervising

The term "supervising" includes directing, motivating, and coordinating. Directing involves instructing, and every good instruction must have certain characteristics: it should be clear, complete, reasonable, and usually in writing. When I say the instruction should be clear, I mean that it should be clear to the person who receives it. It should mean the same thing to him that it did to the person who gave the instruction. The instruction should be complete so the man doing the work will not have to come back with questions about just what is to be done, how far he should go, what materials might be needed, and other factors which might affect the job.

You must have a well-organized and comprehensive system to handle requests for repairs and services. The traditional system is to use written work orders, signed by the appropriate department head and submitted to the department of buildings and grounds. However, I have come to the conclusion this is too cumbersome to really do the job. If something needs attention out there on the campus, I want to know about it as soon as possible and I want to make it easy for someone to report it.

In the first place, we try to catch things before they become problems. Our janitors and maids,who are on the spot, are trained to report to our office anything that needs repair, but we know this is not enough. We encourage everyone, from freshman to president, to pick up the phone and call us whenever they find anything that needs attention. In addition to making communication easy, this process helps to make it more accurate and complete because the secretary is trained to ask questions until she gets the complete picture. She then writes up the work order and passes it on to the head of the department of buildings and grounds.

Our work order form is in triplicate. The original goes to the maintenance man who will be doing the work and the other two copies remain in a "tickler file" so we can check periodically to see that they are not being lost, buried, or forgotten. When the maintenance man completes the job, he records on the back of the work order the number of hours worked and the amount of materials used. At this point, some institutions require the person who originated the request to sign the work order to indicate that the work has been done to his satisfaction.

The storekeeper fills in the cost of the materials used on the job. This original copy of the work order is then matched up with the two copies from the file and all three copies are sent to the accounting department where the total cost of the job is figured and recorded on all three copies. This amount is then charged to the appropriate department and the income is allocated to the payroll and storeroom accounts. One copy is filed in the accounting department. A second copy is returned

to the person who originated the request so he will know the job is considered to be completed and he will also know the cost. The third copy is returned to the department of buildings and grounds where it is reviewed and filed.

Sometimes a request is an emergency which demands immediate attention. Generally speaking, we think anything affecting health, safety, and security is a genuine emergency. We place next in importance, repairs to our utility systems because they are vital to the continuing functioning of the institution. We next consider those requests which affect large numbers of people, such as food service. From there on, we try to take the other work orders in chronological sequence.

You may ask what backlog of work order is reasonable, and of course this will vary with the season and the work load. If, however, routine work orders are completed within a few days of the time they are submitted, then you are probably over-staffed. If, on the other hand, routine jobs have to wait a month or more, then something is wrong somewhere. It is difficult to establish standards in this area, because the work load fluctuates so widely from week to week, but maintenance executives in industry, in government installations, and on college campuses generally agree that about two weeks is a reasonable backlog for routine work orders. This seems to be based on the theory that men work more efficiently when they have a little too much work to do.

I mentioned earlier the importance of setting up a system for preventive maintenance and this must be coordinated with the work order system. The first step is to make a detailed inventory of each piece of equipment and every part of every building which should have routine maintenance. This should include an inspection at which time "name plate data" should be collected and recorded on file cards for future reference. Next a schedule must be set up listing the required frequency of future inspections, along with details about what must be done to each item. This kind of information may be obtained from the manufacturers of the equipment or you can frequently get help from the major oil companies, and other suppliers. The third step is to organize a system whereby work orders will be issued at the recommended intervals for inspection, adjustment, lubrication, cleaning, or other care which may be needed. A system of follow-up is essential to be sure the work gets done, and this information should be recorded.

I mentioned earlier that motivation is an important phase of supervision. Giving adequate instruction is no insurance that the job will be done. Men must be motivated; many books have been written on this complex subject. However, the broad principle seems to be that individuals take action when the satisfactions they hope to derive from doing so outweigh the discomforts or sacrifices that are involved, that is, when the plusses are greater than the minuses. We do not behave in a rational manner based on logical analysis, and the factors which seem important to me may have no influence on you. Nevertheless, generally accepted as items to which men do tend to respond are: higher financial income, social status and respect, security, attractive work, opportunity for development, personal power and influence, treatment of each subordinate as an individual

person, a voice in his own affairs for each man, and just and diligent supervision. Even though your financial resources are limited, your institutions may have some advantages over larger colleges and universities. Because you know the workers as individuals and they know you, the personal relationship is likely to give them greater motivation.

Somewhat as an aside, I should point out that it is important to top management to set and enforce high standards for its own performance of those functions that determine the worker's ability to perform his job. Few things demoralize the boys in the shop as much as having to sit around, or to have to do a job over again, while management fumbles or delays making decisions.

I have also mentioned the need for coordination. However, the good manager will spend only a small part of his time on this specific function. Instead he achieves harmonious, dovetailed, and integrated action from his men largely through the skillful use of all phases of administration--planning, organizing, supervising, and controlling.

Controlling

The fourth phase of administration is controlling, that is, seeing that the operating results conform as nearly as possible to the plans. Any control process has three basic steps:

1. Setting standards at strategic points. An annual budget would be an example of such a standard.
2. Checking and reporting on performance. A monthly report on expenses would serve this function.
3. Taking corrective action when the performance deviates from the plan.

Corrective action may be taken by some combination of the following steps:

1. Adjust the physical situation. For example, you may find it necessary to provide a truck for transporting men and materials to the job site.
2. Review the direction, training, and selection of subordinates.
3. Improve motivation.
4. Modify plans where necessary.

One form of control is financial. The annual budget for operations and maintenance of the physical plant sets forth, in terms of dollars and cents, the plan for the coming year. Monthly reports of expenses will give a check against this goal. By the end of the year, if all goes well, the total expense will more or less equal the total amount budgeted.

Because dollars and cents are so important, I will elaborate a little on some of the problems of financial control. Ideally, the budget is ultimately the president's responsibility. He is the one person who has the total picture in view and he (with the advice and consent of his board of control) must make the final decisions about how and where to spend the funds which are available.

However, in practice, the preparation of the budget must be a cooperative enterprise. For example, the man in charge of the physical plant should play an important part in the preparation of the budget request for operation and maintenance of the physical plant because he knows better than any other person what is needed in all the various buildings. The business manager also plays a key role because he is in a strategic position to evaluate requests, and he know better than anyone else what is and what is not financially possible.

College administrators frequently try to compare their cost figures with those of similar institutions and, as you business managers know, this can be a very tricky game since each institution has its own peculiar problems and very possibly its own peculiar system of accounting. You have probably noted, for example, that other schools spend from 10 to 20 percent of their total budget for educational and general expenditures on operation and maintenance of the physical plant, with an average of around 16 percent. However, this figure does not mean very much unless you know how they allocated to auxiliary enterprises major costs such as heat, light, power, and water; or grounds; or police and watchmen; or administration and supervision. Another factor which can throw these figures out of line is the cost of major alterations and improvements which might be charged against the current general funds budget or which might be considered as capital expenses.

The National Federation of College and University Business Officers Association has worked long and hard on this problem. You are all familiar with the famous Volume 1 and Volume 2 of College and University Business Administration, which are considered the bible of the college business office. You should also be familiar with The Sixty-College Study, A Second Look. These projects laid the foundation for a uniform system of accounting so that the report on the current general funds budget from one college may be compared with that of another institution. There are still many variables and you should know something about an institution before you can intelligently evaluate its reports.

The account for operation and maintenance of the physical plant should be broken down into the following major classifications:

1. Administrative. This includes all costs related to general administration of plant maintenance and operation. We include here the salaries of the administrator and his assistant(s), the secretary, and the storekeeper. We also include operation of the shop itself, trucking and trash collection, plus vacation and sick leave for the maintenance department.

2. Building Maintenance. This includes all costs related to routine repair of educational buildings, including normally recurring repairs and preventive maintenance. We do not include costs for alterations and improvements, major remodeling, new construction, major renovation, or maintenance costs in areas such as auxiliary enterprises for which reimbursement is received.

3. Janitorial Services. Includes all costs related to janitorial and custodial services to educational buildings. We include here the cost of small setups, snow removal 30 feet out from the building, and other operating costs such as paper towels and tissue, wax, erasers, chalk, cleaners, and equipment used in these operations.

4. Traffic, Security, and Safety. Includes all costs for watchmen, police, and services related to plant and campus security and safety.

5. Utilities. Includes all costs for energy for heat, light and power, gas, ventilation, air conditioning, water, sewer, and any other utilities necessary for the operation of the physical plant.

6. Grounds. Includes all costs for operation and maintenance of campus grounds, including trees, grass, shrubs, flowers, roads, walks, parking areas, playing fields, etc.

7. Alterations and Improvements. Includes all costs for major nonrecurring repairs, remodeling or alterations of buildings, major deferred-maintenance items, and construction of new buildings and structures. Please note, this classification is ordinarily excluded in reporting on cost of operation and maintenance of the physical plant.

To the above classifications, the business managers frequently add the cost of property insurance, but the superintendent of buildings and grounds seldom has much authority over this expenditure.

Prompt and intelligible reports on all expenditures in these categories should be prepared by the accounting department for the superintendent of buildings and grounds. When I say "intelligible," I mean intelligible to the man who is responsible for controlling the account. I sometimes feel that reports from accountants should give more explanation and interpretation because many of us are overwhelmed, or at least confused, by the usual jungle of figures which go as financial reports.

The work order system will give a degree of control of the output of the department of buildings and grounds but, just as important, the effective physical plant administrator will know his men and what they are doing every day. There is no substitute for close personal supervision; this is another place where the small college has a real advantage.

Developing People

So far I have talked about four basic processes of administration: planning, organizing, supervising, and controlling. The success or failure of the administrator depends upon the people who work under him and my experience with business and industry has frequently reminded me that even the biggest, most efficient organizations are made up of individuals, all of whom have not only certain strengths and abilities but also definite faults and weaknesses. In addition to going through the motions of being a good administrator, the successful leader must also help develop the people with whom he works.

Peter Drucker explains this process nicely in his book, The Practice of Management, where he says, "Through the way he manages, he makes it easy or difficult for people to develop themselves. He directs people or he misdirects them. He brings out what is in them or he stifles them. He strengthens their integrity or he corrupts them. He trains them to stand upright and strong, or he deforms them. Every manager does these things when he manages--whether he knows it or not. He may do them well, or he may do them wretchedly. But he always does them."

As you reflect upon that statement, you will realize that, especially in this respect, the work of the administrator is somewhat like that of the teacher.

Actually, one aspect of developing people is helping them to continue to learn and, when you think about it, you will probably be surprised at how many opportunities for continuing education are readily available.

Many of you have attended the College Business Management Short Course held each summer at the University of Omaha, or a similar course offered by the University of Kentucky. I am sure you have found these courses to be very helpful, but have you thought of sending your man in charge of the physical plant to one of them so he will get a better understanding of your problems and of his role in the organization? Some of the same benefits may be derived from attending the state meetings of the College and University Business Officers Association.

The National Association of Physical Plant Administrators of Universities and Colleges also has an annual workshop, lasting a week. This program covers many aspects of plant management and I can recommend it highly. The regional and annual meetings are also helpful because they not only feature lectures by outstanding authorities in the field but they also schedule periods for experience exchange.

Our college conducts training programs both for foremen and for executives from our local industries. The principles and practices which are promoted in these courses also apply to the campus situation. Your school may have similar programs or perhaps you can find them in some other institution within commuting distance.

Your public school system may have night school or vocational courses in subjects such as refrigeration, welding, cabinet making, and other crafts.

Even if a man knows his field, things continue to change and it is necessary to read the trade journals and other periodicals if he is to keep up with progress in his subject.

Do not overlook the training programs which are sponsored by many of the large manufacturers of equipment. For example, both the Johnson Service Company and Honeywell have excellent training courses for men who

work with temperature control equipment. Bell and Gossett has sponsored a school for men who maintain and operate steam and hot water heating systems. Binks has a school of spray painting. Gunlocke has a program on furniture repair. Best has a training program on locks and keys. Some of the trade associations have training programs. For example, our local chapter of the power engineers' association conducted a special series of meetings on steam traps.

I do not know how we got into this situation but many colleges treat their maintenance personnel as if they were somehow different from other employees of the institution. They may be paid on an hourly basis while everyone else is on salary. They may get less vacation and less sick leave. They may be left out of the program for hospital and medical insurance. They may be overlooked in the retirement plan.

If I were to ask you administrators how many follow sound personnel practices on your campus, I expect I would receive a very favorable picture and, if I were to make a survey of the attitudes of your employees, I expect I would get a somewhat different picture, though still generally favorable. You may get along without formalized personnel policies because most of you actually know the men and women who work under you. They can discuss their problems with you. They feel that they are an important part of the college and that their work is significant. Small colleges have a real advantage in this respect. However, I should warn you to watch closely for the dangers of paternalism in this kind of situation. It is all too easy to become a benevolent ruler who is patronizing and condescending in his relationships with his subjects. This attitude sneaks up on you easily and can quickly corrode your relationships before you realize you have done anything wrong.

Personnel practices should be worked out cooperatively and should be recorded on paper so that a man may know just what is expected of him and just what he can expect in return. This removes the possibility of misunderstanding. It also prevents you from feeling that you are doing a man a favor while he thinks he is merely getting his just rewards.

You should have a printed manual which answers the questions that are important to your employees. This should include a simple and understandable statement of your policies regarding: payday, promotions, overtime, deductions, hours of work, rest periods, vacations, sick leave, holidays, leaves, retirement, disability benefits, death benefits, hospitalization, injuries on the job, safety, and special staff benefits.

As Drucker says, the manager must encourage "people to develop themselves." Job evaluation is one of the best devices for helping this. All too often we jump on a man when he does something wrong, and ignore him when all goes well. Many industries have adopted a practice of scheduling job reviews with each employee on a regular basis. Once or twice a year somebody of importance, perhaps from the personnel department or perhaps his own boss, sits down with each worker and talks things over with him. How does he feel about his job? What are his goals? What would he really like to be doing? What is he doing well? Where can he improve his work? What should he do to deserve a raise? These sessions

can be more or less routine and meaningless, or they can be creative and rewarding, depending upon how they are conducted. The person who leads the interview must have an open attitude and have some skills in the art of talking with people. A written report of the meeting should be given to the worker and a copy should be placed in the files for future reference.

I have shared with you some of the concepts which contribute to successful plant management--planning, organizing, supervising, controlling, and developing men. The emphasis has been on human relations because the job is too big for any one of us to do alone. We must learn to work together effectively if we are to achieve our goal of a better education for our young people.

In our positions as administrators, as well as in our roles as educators, we must somehow develop the kind of environment in which people will learn and grow and produce their finest work.

The theme of EXPO 67 is "Man and His World", which is the title of a book by Antoine de Saint-Exupery. He says, "To be a Man is to have the conviction that when one lays a brick, one is taking a hand in building the world." Let us try to inspire that kind of devotion in the people with whom we work.

JOB DESCRIPTION

Superintendent of Buildings and Grounds

I. Develop for the approval of the business manager programs, methods, procedures, and standards for controlling the maintenance, repair, and operation of college buildings and grounds.

A. Administer the department of buildings and grounds, maintaining sound personnel relations therein. Subject to the business manager's approval, select personnel, determine their duties, and make recommendations regarding their compensation and tenure.

B. Supervise the operation of the power plant and utilities distribution systems; the plumbing, heating, ventilating, air conditioning, and electrical facilities of all buildings; the cleaning and operation of educational buildings; the maintenance of college grounds and playing fields; and the upkeep and use of college trucks and equipment, making certain that established standards are maintained.

C. Plan work and issue orders to college maintenance personnel for all maintenance, repair services, and authorized alteration work.

D. Supervise the system of preventive maintenance to insure efficient and continual service of equipment.

E. Schedule campus protection by night watchmen. Supervise the registration of all cars on campus, develop policy regarding traffic on campus, and administer the traffic court.

F. Supervise the storage and moving of furniture and equipment under the direction of the business manager. However, respective department heads are responsible for care of special equipment used by their department, including such items as research apparatus and musical instruments.

G. Maintain a master file of building plans and space use records, as well as essential records for planning and scheduling maintenance inspections and follow-up.

H. Assist business manager in preparation of annual request for appropriations covering buildings and grounds operations. Administer operations within approved budget, utilizing the accounting budgetary control records as required.

I. Establish high performance standards for the operation of the department of buildings and grounds and hold subordinates responsible for effective discharge of their assigned duties.

II. Assist, serve, and act for the business manager with direct administrative responsibility for planning the development of the physical plant.

A. Make studies of present space use to help determine future requirements.

B. Review the master plan periodically to make sure that it reflects the changing needs of the college.

C. Work with the architect and appropriate committees in developing the program of requirements for each new or remodeled facility.

D. Conduct research on the latest construction methods and materials.

E. Obtain accurate estimates of the cost of each project.

F. Work with the architect and appropriate committees in preparation of preliminary drawings.

G. Work closely with the architect in the preparation of working drawings and specifications.

1. Serve as liaison between the architect and the faculty, staff, and others of the college.
2. Insure the continual flow of information back and forth between persons involved in the project.
3. Review plans with the department of buildings and grounds to insure the efficient operation of the project.

H. Assist in the bidding procedure.

I. Supervise all new construction and major remodelling projects.

J. Plan the decoration and furnishing of new facilities.

K. Develop plans for landscaping.

L. Keep records of all meetings related to planning and construction, as well as maintain a master file of blue prints and specifications for each major project.

RECOMMENDATIONS FOR READING AND REFERENCE

Books

Administrative Action, by William H. Newman; Prentice-Hall, Inc. 2nd ed., 1963

Architectural Graphic Standards, by Charles George Ramsey and Harold Reeve Sleeper; John Wiley and Sons, Inc., 5th ed., 1956

College and University Business Administration, Vol. 1 & 2, compiled by The National Committee on the Preparation of a Manual on College and University Business Administration; American Council on Education, 1952, 1955 (Rev. ed. to be published in late 1967)

A Complete Guide to Building and Plant Maintenance, by Thomas F. Sack; Prentice-Hall, Inc., 1963

Fundamentals of Physical Plant Management, Planning and Construction, National Association of Physical Plant Administrators of Universities and Colleges, 1966

Handbook of Air Conditioning, Heating and Ventilating, by Clifford Strock and R. L. Koral; The Industrial Press, 2nd ed., 1965

Maintenance Management, by Bernard T. Lewis and William W. Pearson; John F. Rider Publisher, Inc., 1963

A Study of Income and Expenditures in Sixty Colleges, 1955, and The Sixty College Study, A Second Look, 1960, under the direction of the National Federation of College and University Business Officers Associations

Time-Saver Standards, by John Hancock Callender; McGraw-Hill Book Co., 4th ed., 1966

Periodicals

Architectural Record

Buildings, the Construction and Building Management Journal

College and University Business

The Executive Housekeeper

Modern Maintenance Management

Park Maintenance